



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

H.A

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,088	06/29/2005	Takahiro Arakida	075834.00455	4114
33448	7590	07/18/2006	EXAMINER	
ROBERT J. DEPKE LEWIS T. STEADMAN ROCKEY, DEPKE, LYONS AND KITZINGER, LLC SUITE 5450 SEARS TOWER CHICAGO, IL 60606-6306			BLEVINS, JERRY M	
			ART UNIT	PAPER NUMBER
			2883	
DATE MAILED: 07/18/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/541,088	<b>Applicant(s)</b> ARAKIDA ET AL.	
	<b>Examiner</b> Jerry Martin Blevins	<b>Art Unit</b> 2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 05/15/2006

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

Art Unit: 2883

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed April 28, 2006 have been fully considered but they are not persuasive.

Namely, the applied prior art reference to Yasuda et al., US 2002/0154879, teaches a second waveguide (Figure 4, 28) formed with a dimension such that one side which is coupled to a first waveguide (26) is smaller than the other side (coupled to light input element 30). Yasuda teaches in paragraph 89, pages 5 and 6, that waveguide 28 is tapered, as can be readily seen from Figure 4 as well.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 5, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent to Fujita et al., number 6,157,760 in view of Yasuda.

Regarding claim 1, Fujita teaches an optical waveguide (Figure 1) comprising a first waveguide (3) having a common transmitting and receiving port (11) at one side and a receiving port (6) at the other side, extending linearly, and able to guide an optical signal in bi-direction (bi-directional arrows of Figure 1 and column 5, lines 56-59), and a

Art Unit: 2883

second waveguide (4) branching off from the first waveguide so as to make an acute angle with the receiving port, coupling the first waveguide at one side, having a transmitting port (7) at the other side, and guiding an optical signal to the first waveguide (column 7, lines 37-48). Fujita does not teach that the second waveguide is formed with a dimension of the one side which is coupled to the first waveguide so as to make the one side smaller than the other side. Yasuda teaches a second (sending) waveguide (Figure 4, element 28) coupled to a first (receiving) waveguide (26) at an acute angle and tapered such that the side coupled to the first waveguide (the one side) is smaller than the side coupled to the transmitter (the other side) (pages 5 and 6, paragraph 89). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Fujita with the tapered waveguide of Yasuda. The motivation would have been to improve the efficiency of the light coupling (pages 5 and 6, paragraph 89).

Regarding claim 2, Fujita teaches that the first waveguide is formed with a dimension able to guide a plurality of modes of the optical signal (column 8, lines 60-67 and column 19, line 53 – column 20, line 10).

Regarding claim 4, Fujita teaches an optical transmitting and receiving module (Figure 1, element 1) coupled with an optical fiber (2), a light emitting element (7) and a light receiving element (6) via an optical waveguide comprising a first waveguide (3) coupling the optical fiber at one side and the light receiving element at the other side and extending linearly, and a second waveguide (4) branching off from the first waveguide so as to make an acute angle with the other side of the first waveguide and

Art Unit: 2883

coupling the first waveguide at the one side and the light emitting element at the other side. Fujita does not teach that the second waveguide is formed with a dimension of the one side which is coupled to the first waveguide so as to make the one side smaller than the other side. Yasuda teaches a second (sending) waveguide (Figure 4, element 28) coupled to a first (receiving) waveguide (26) at an acute angle and tapered such that the side coupled to the first waveguide (the one side) is smaller than the side coupled to the transmitter (the other side) (pages 5 and 6, paragraph 89). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Fujita with the tapered waveguide of Yasuda. The motivation would have been to improve the efficiency of the light coupling (pages 5 and 6, paragraph 89).

Regarding claim 5, Fujita teaches that the first waveguide is formed with a dimension able to guide a plurality of modes of the optical signal (column 8, lines 60-67 and column 19, line 53 – column 20, line 10).

Regarding claim 7, Fujita teaches an optical waveguide (Figure 1) comprising a first waveguide (3) having a common transmitting and receiving port (11) at one side and a receiving port (6) at the other side, extending linearly, and able to guide an optical signal in bi-direction (bi-directional arrows of Figure 1 and column 5, lines 56-59), and a second waveguide (4) branching off from the first waveguide so as to make an acute angle with the receiving port, coupling the first waveguide at one side, having a transmitting port (7) at the other side, and guiding an optical signal to the first waveguide (column 7, lines 37-48). Fujita does not teach that the second waveguide is formed with a dimension of the one side which is coupled to the first waveguide so as to

Art Unit: 2883

make the one side smaller than the other side. Yasuda teaches a second (sending) waveguide (Figure 4, element 28) coupled to a first (receiving) waveguide (26) at an acute angle and tapered such that the side coupled to the first waveguide (the one side) is smaller than the side coupled to the transmitter (the other side) (pages 5 and 6, paragraph 89). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Fujita with the tapered waveguide of Yasuda. The motivation would have been to improve the efficiency of the light coupling (pages 5 and 6, paragraph 89). Fujita also does not teach that the second waveguide is curved at a portion adjacent the first waveguide. Yasuda teaches that the second waveguide is curved at a portion adjacent the first waveguide (page 9, paragraph 128). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Fujita with the curved waveguide of Yasuda. The motivation would have been to allow for greater distances between the waveguides without reducing efficiency (Yasuda, paragraph 128).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

Art Unit: 2883

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry Martin Blevins whose telephone number is 571-272-8581. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JMB



**BRIAN HEALY**  
**PRIMARY EXAMINER**